

[0135] method steps and/or devices, units or means likely to be implemented as hardware components at the above-defined apparatuses, or any module(s) thereof, (e.g., devices carrying out the functions of the apparatuses according to the embodiments as described above) are hardware independent and can be implemented using any known or future developed hardware technology or any hybrids of these, such as MOS (Metal Oxide Semiconductor), CMOS (Complementary MOS), BIMOS (Bipolar MOS), BiCMOS (Bipolar CMOS), ECL (Emitter Coupled Logic), TTL (Transistor-Transistor Logic), etc., using for example ASIC (Application Specific IC (Integrated Circuit)) components, FPGA (Field-programmable Gate Arrays) components, CPLD (Complex Programmable Logic Device) components or DSP (Digital Signal Processor) components;

[0136] devices, units or means (e.g. the above-defined network entity or network register, or any one of their respective units/means) can be implemented as individual devices, units or means, but this does not exclude that they are implemented in a distributed fashion throughout the system, as long as the functionality of the device, unit or means is preserved;

[0137] an apparatus like the user equipment and the network entity/network register may be represented by a semiconductor chip, a chipset, or a (hardware) module comprising such chip or chipset; this, however, does not exclude the possibility that a functionality of an apparatus or module, instead of being hardware implemented, be implemented as software in a (software) module such as a computer program or a computer program product comprising executable software code portions for execution/being run on a processor;

[0138] a device may be regarded as an apparatus or as an assembly of more than one apparatus, whether functionally in cooperation with each other or functionally independently of each other but in a same device housing, for example.

[0139] In general, it is to be noted that respective functional blocks or elements according to above-described aspects can be implemented by any known means, either in hardware and/or software, respectively, if it is only adapted to perform the described functions of the respective parts. The mentioned method steps can be realized in individual functional blocks or by individual devices, or one or more of the method steps can be realized in a single functional block or by a single device.

[0140] Generally, any method step is suitable to be implemented as software or by hardware without changing the idea of the present invention. Devices and means can be implemented as individual devices, but this does not exclude that they are implemented in a distributed fashion throughout the system, as long as the functionality of the device is preserved. Such and similar principles are to be considered as known to a skilled person.

[0141] Software in the sense of the present description comprises software code as such comprising code means or portions or a computer program or a computer program product for performing the respective functions, as well as software (or a computer program or a computer program product) embodied on a tangible medium such as a computer-readable (storage) medium having stored thereon a respective data structure or code means/portions or embodied in a signal or in a chip, potentially during processing thereof.

[0142] The present invention also covers any conceivable combination of method steps and operations described above, and any conceivable combination of nodes, apparatuses, modules or elements described above, as long as the above-described concepts of methodology and structural arrangement are applicable.

[0143] In view of the above, there are provided measures for network assisted proximity service session management. Such measures exemplarily comprise discovering a proximity service target, said proximity service target providing proximity service, and setting up, via uplink and downlink signaling, proximity service communication with said proximity service target.

[0144] Even though the invention is described above with reference to the examples according to the accompanying drawings, it is to be understood that the invention is not restricted thereto. Rather, it is apparent to those skilled in the art that the present invention can be modified in many ways without departing from the scope of the inventive idea as disclosed herein.

LIST OF ACRONYMS AND ABBREVIATIONS

3GPP 3rd Generation Partnership Project

[0145] ACK acknowledgement

DoS denial of service

eNB evolved NodeB

EPC evolved packet core

FS_ProSe Feasibility Study for Proximity-based Services

[0146] HSS home subscriber server

LTE Long Term Evolution

[0147] MAC medium access control

MME mobility management entity

MSISDN mobile station international subscriber directory number

NAI network access identifier

P-GW packet data network gateway

P2P peer-to-peer

S-GW serving gateway

SA1 system aspects 1

UE user equipment

1. A method comprising

discovering a proximity service target, said proximity service target providing proximity service; and

setting up, via uplink and downlink signaling, proximity service communication with said proximity service target.

2. The method according to claim 1, wherein, in relation to said setting up, said method further comprises

transmitting an uplink signaling comprising a proximity service request, said proximity service request comprises at least an own identity and a proximity service target identity; and

receiving a downlink signaling comprising a proximity service acknowledgement, said proximity service acknowledgement comprises at least a session key for ciphering said proximity service communication.

3. The method according to claim 1, wherein, in relation to said setting up, said method further comprises